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FLORES, LEON	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/675,215	Applicant(s) MALTSEV ET AL.	
	Examiner Leon Flores	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 21 June 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 30 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims (1-2, 13-14, 22, 28-29) are rejected under 35 U.S.C. 102(b) as being anticipated by Kuwabara et al. (hereinafter Kuwabara) (US Publication 2001/0015954 A1)**

Re claim 1, Kuwabara discloses a method comprising: generating a phase compensation estimate based on channel conditions for a data symbol of an orthogonal frequency division multiplexed (OFDM) packet from pilot sub-carriers within the data symbol (See fig. 1: the output of element 9 & paragraphs 32-37); and applying the phase compensation estimate to sub-carriers of the data symbol in the frequency domain after performance of a Fourier transform on the data symbol. (See fig. 1: the output of element 9 & paragraphs 32-37)

Re claim 2, Kuwabara further discloses that wherein the phase compensation estimate is applied to the sub-carriers of the data symbol in the frequency domain prior to de-mapping the sub-carriers. (See fig. 1: element 10 & paragraph 38)

Re claim 13, Kuwabara further discloses performing a Fast Fourier Transform (FFT) on the plurality of parallel groups of time- domain samples that represent the data symbol to generate frequency domain symbol modulated sub-carriers prior to applying the phase compensation estimate (See fig. 1: element 3); separating the pilot sub-carriers from data sub-carriers of the frequency domain symbol modulated sub-carriers for use in generating the phase compensation estimate (See fig. 1: element 5 & paragraph 34); and de-mapping the data symbol after applying the phase compensation estimate to generate at least a portion of a decoded bit stream. (See fig. 1: element 10 & paragraph 38)

Re claim 14, Kuwabara further discloses that wherein the pilot sub-carriers are comprised of modulated pilot symbols having known training values and modulated on a predetermined portion of sub-carriers of the plurality. (See fig. 1: element 5 & paragraph 34)

Claim 22 is a system claim corresponding to method claim 1. Hence, the steps performed in method claim 1 would have necessitated the elements in system claim 22. Therefore, claim 22 has been analyzed and rejected w/r to claim 1 above.

Claim 28 has been analyzed and rejected w/r to claim 1 above.

Re claim 29, Kuwabara further discloses wherein the instructions, when executed by the computing platform, further result in repeating generating and applying for subsequent data symbols of the OFDM packet, and wherein the data symbol is comprised of a plurality of symbol modulated sub-carriers, at least some of the symbol-modulated sub-carriers of the plurality being the pilot sub-carriers. (See fig. 1 & paragraphs 32-34)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims (3-6, 9-11, 23-27, 30) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara et al. (hereinafter Kuwabara) (US Publication**

2001/0015954 A1), as applied to claim 1 above, and further in view of Perets et al (hereinafter Perets), *"A New Phase and Frequency Offset Estimation Algorithm for OFDM Systems Applying Kalman Filter"*, Department of Electrical Engineering-Systems, Tel Aviv University, December 2002.

Re claim 3, Kuwabara further discloses repeating generating and applying for subsequent data symbols of the OFDM packet, and wherein the data symbol is comprised of a plurality of symbol modulated sub-carriers, at least some of the symbol-modulated sub-carriers of the plurality being the pilot sub-carriers, and wherein generating the phase compensation estimate comprises:

But the reference of Kuwabara fails to specifically disclose weighting the pilot subcarriers based on fading gains for the pilot subcarriers; combining the weighted pilot sub-carriers in an observation vector former to generate an observation vector; and recursively filtering the observation vector using a channel estimate to generate the phase compensation estimate.

However, Perets does. (See sections 3 & 4) Perets discloses a method for estimating the phase and frequency offset by using an extended Kalman filter algorithm. This algorithm estimates and tracks the phase and frequency offsets in an OFDM system.

Therefore, taking the combined teachings of Kuwabara and Perets as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Kuwabara, in the manner as claimed, and as taught by Perets, for the benefit of achieving fast convergence and good tracking ability. (See

abstract)

Re claim 4, the combination of Kuwabara and Perets further discloses wherein repeating generating the phase compensation estimate comprises: combining the pilot sub-carriers of a present data symbol to generate an observation vector for the present data symbol; and performing recursive filtering on the observation vector for the present data symbol to generate the phase compensation estimate for the present data symbol. (In Perets, see sections 3 & 4)

Re claim 5, the combination of Kuwabara and Perets further discloses wherein repeating generating the phase compensation estimates comprises: combining the pilot sub-carriers of a present data symbol to generate an observation vector for the present data symbol; and performing recursive filtering on the observation vector for the present data symbol to generate a frequency offset estimate and the phase compensation estimates for a next data symbol. (In Perets, see sections 3 & 4)

Re claim 6, the combination of Kuwabara and Perets further discloses wherein recursively filtering comprises performing extended Kalman filtering on the observation vector using the [[a]] channel estimate, an additive noise power estimate, a signal to noise ratio (SNR) estimate, a priori information about a dynamic model of phase, and a phase noise power value from a phase noise spectrum of transceiver oscillators. (In Perets, see sections 3 & 4)

Re claim 9, the combination of Kuwabara and Perets further discloses wherein combining includes weighting the pilot sub-carriers based on fading gains for the pilot sub-carriers prior to combining the weighted sub-carriers in generating the observation vector, and wherein the method further comprises generating a channel estimate from long training symbols of the OFDM packet, and wherein weighting includes applying weights to pilot sub-carriers, the weights being complex conjugates of the fading gains of the pilot sub-carriers, the fading gains being determined from the channel estimate. (In Perets, see sections 3 & 4)

Re claim 10, the combination of Kuwabara and Perets further discloses wherein recursively filtering comprises: subtracting a predicted observation vector from the observation vector to generate a residual vector; multiplying the residual vector by a gain matrix to generate a residual gain vector; adding the residual gain vector to a linear prediction vector to generate an estimate vector; and extracting a frequency offset estimate and the phase compensation estimate for the data symbol from the estimate vector. (In Perets, see sections 3 & 4)

Re claim 11, the combination of Crawford and Perets further discloses wherein the estimate vector is a multi-dimensional vector comprised of the frequency offset estimate and the phase compensation estimate (In Perets, see section 3 & 4), and wherein the phase compensation estimate is applied to a data symbol subsequent to

performing a Fast Fourier Transform (FFT) on the data symbol.(In Kuwabara, see fig. 1)

Claim 23 is a system claim corresponding to method claims 3 & 6. Hence, the steps performed in method claims 3 & 6 would have necessitated the elements in system claim 23. Therefore, claim 23 has been analyzed and rejected w/r to claims 3 & 6 above.

Claim 24 is a system claim corresponding to method claim 9. Hence, the steps performed in method claim 9 would have necessitated the elements in system claim 24. Therefore, claim 24 has been analyzed and rejected w/r to claim 9 above.

Claim 25 is a system claim corresponding to method claim 9. Hence, the steps performed in method claim 9 would have necessitated the elements in system claim 25. Therefore, claim 25 has been analyzed and rejected w/r to claim 9 above.

Claim 26 is a system claim corresponding to method claim 6. Hence, the steps performed in method claim 6 would have necessitated the elements in system claim 26. Therefore, claim 26 has been analyzed and rejected w/r to claim 6 above.

Claim 27 is a system claim corresponding to method claim 7. Hence, the steps performed in method claim 7 would have necessitated the elements in system claim 27. Therefore, claim 27 has been analyzed and rejected w/r to claim 7 above.

Claim 30 is a system claim corresponding to method claims 3 & 4. Hence, the steps performed in method claims 3 & 4 would have necessitated the elements in system claim 30. Therefore, claim 30 has been analyzed and rejected w/r to claims 3 & 4 above.

7. **Claims (7-8, 15-21) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara et al. (hereinafter Kuwabara) (US Publication 2001/0015954 A1) and Perets et al (hereinafter Perets), *"A New Phase and Frequency Offset Estimation Algorithm for OFDM Systems Applying Kalman Filter"*, Department of Electrical Engineering-Systems, Tel Aviv University, December 2002, as applied to claim 3 above, and further in view of McFarland et al. (hereinafter McFarland) (US Patent 7,027,530 B2)**

Re claim 7, the combination of Kuwabara and Perets fails to specifically disclose that wherein the channel estimate is generated from a long training symbol of the OFDM packet, and wherein the additive noise power estimate and the SNR estimate are generated from short training symbols of the OFDM packet.

However, McFarland does. (See col. 2, lines 58-65) McFarland discloses an OFDM system that estimates and compensates for channel impairments. The system uses short training sequences for signal detection, an initial automatic gain control adjustment, diversity selection, coarse frequency offset estimation and timing synchronization. And two long training symbols for channel and fine frequency offset estimation.

Therefore, taking the combined teachings of Kuwabara, Perets, and McFarland as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Kuwabara, as modified by Perets, and as taught by McFarland, for the benefit of optimizing/enhancing the communication link between the transmitter and receiver.

Re claim 8, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the OFDM packet is comprised of a plurality of sequential symbol modulated sub-carriers, beginning with the short training symbols modulated on a portion of the sub-carriers followed by the long training symbol and a plurality of data symbols, the data symbols containing at least one known pilot sub-carrier, and wherein the channel estimate, the additive noise power estimate, the SNR estimate, and the phase noise power value are used substantially for data symbols of the OFDM packet. (In McFarland, see fig. 1 & col. 2, lines 58-65)

Re claim 15, the motivation for combining these references has already been established in claim 7 above. Therefore, the combination of Kuwabara, Perets, and McFarland further discloses a phase tracking unit comprising: an observation vector former to weight and combine pilot sub-carriers of a data symbol of an orthogonal frequency division multiplexed (OFDM) packet to generate an observation vector (In Perets, see sections 3 & 4); and a recursive filter to recursively filter the observation vector to generate a phase compensation estimate for the data symbol, the recursive

filter using a channel estimate, an additive noise power estimate, a signal to noise ratio (SNR), and a phase noise value estimate to perform the recursive filtering (In Perets, see sections 3 & 4) wherein the phase compensation estimate is applied to sub-carriers of the data symbol in the frequency domain after performance of a Fourier transform (In Kuwabara, see fig. 1), and wherein the observation vector former weights the pilot sub-carriers based on fading gains. (In Perets, see sections 3 & 4. Furthermore, one skilled in the art would know that in order to compensate for channel impairments the incoming signals must be weighted based on the characteristics of the path.)

Re claim 16, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the observation vector former includes a weighting element to weight the pilot sub-carriers based on the fading gains for the pilot sub-carriers. (In Perets, see sections 3 & 4. Furthermore, one skilled in the art would know that in order to compensate for channel impairments the incoming signals must be weighted based on the characteristics of the path.)

Re claim 17, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the weighting element receives the channel estimate generated from long training symbols of the OFDM packet, and wherein the weighting element applies weights to pilot sub-carriers, the weights being complex conjugates of the fading gains, the fading gains being determined from the channel estimate. (In Perets, see sections 3 & 4. Furthermore, one skilled in the art would know that in order to

compensate for channel impairments the incoming signals must be weighted based on the characteristics of the path.)

Re claim 18, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the recursive filter performs recursive filtering to generate phase compensation estimates for a present data symbol of the OFDM packet. (In Perets, see sections 3 & 4. Furthermore, one skilled in the art would know that in order to compensate for channel impairments the incoming signals must be weighted based on the characteristics of the path.)

Re claim 19, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the observation vector former further combines the pilot sub-carriers of the present data symbol to generate an observation vector for the present data symbol; and the recursive filter recursively filters the observation vector for the present data symbol to generate the phase compensation estimate for the present data symbol. (In Perets, see sections 3 & 4)

Re claim 20, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the recursive filter subtracts a predicted observation vector from the observation vector to generate a residual vector, multiplies the residual vector by a gain matrix to generate a residual gain vector, adds the residual gain vector to a linear

prediction vector to generate an estimate vector and extracts the phase compensation estimate for the data symbol from the estimate vector. (In Perets, see sections 3 & 4)

Re claim 21, the combination of Kuwabara, Perets, and McFarland further discloses that wherein the estimate vector is a multi\- dimensional vector comprised of frequency offset and the phase compensation estimates, and wherein extracting includes extracting the phase compensation estimate for a data symbol from the estimate vector, and wherein the phase compensator applies the phase compensation estimate to the data symbol subsequent to performing a Fast Fourier Transform on the data symbol. (In Kuwabara, see fig. 1)

8. **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara et al. (hereinafter Kuwabara) (US Publication 2001/0015954 A1) and Perets et al (hereinafter Perets), *"A New Phase and Frequency Offset Estimation Algorithm for OFDM Systems Applying Kalman Filter"*, Department of Electrical Engineering-Systems, Tel Aviv University, December 2002, as applied to claim 3 above, and further in view of Crawford (US Publication 2002/0159533 A1).**

Re claim 12, the combination of Kuwabara and Perets further discloses wherein the estimate vector is a multi-dimensional vector comprised of a frequency offset estimate and the phase compensation estimate (In Perets, see section 3 & 4).

But the combination of Kuwabara and Perets fails to teach that the method further comprises rotating a phase of a serial symbol stream comprising the data symbol prior to performing a Fast Fourier Transform on the data symbol.

However, Crawford does. (See fig. 3) Crawford discloses a system for rotating the phase of the incoming signal prior to FFT processing.

Therefore, taking the combined teachings of Kuwabara, Perets, and Crawford as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Kuwabara, as modified by Perets, and as taught by Crawford, for the benefit phase rotating the incoming signal.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claims (1, 22, 28) are rejected under 35 U.S.C. 102(e) as being anticipated by McFarland et al. (hereinafter McFarland) (US Patent 7,027,530 B2)**

Re claim 1, McFarland discloses a method comprising: generating a phase compensation estimate based on channel conditions for a data symbol of an orthogonal frequency division multiplexed (OFDM) packet from pilot sub-carriers within the data

symbol (See fig. 2: 228); and applying the phase compensation estimate to sub-carriers of the data symbol in the frequency domain after performance of a Fourier transform on the data symbol. (See fig. 2: 228)

Claim 22 is a system claim corresponding to method claim 1. Hence, the steps performed in method claim 1 would have necessitated the elements in system claim 22. Therefore, claim 22 has been analyzed and rejected w/r to claim 1 above.

Claim 28 has been analyzed and rejected w/r to claim 1 above.

11. Claims (3 & 15) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara et al. (hereinafter Kuwabara) (US Publication 2001/0015954 A1) in view of John G. Proakis (hereinafter Proakis), "Digital Communications", fourth edition, 2000.

Re claim 3, Kuwabara further discloses repeating generating and applying for subsequent data symbols of the OFDM packet, and wherein the data symbol is comprised of a plurality of symbol modulated sub-carriers, at least some of the symbol-modulated sub-carriers of the plurality being the pilot sub-carriers, and wherein generating the phase compensation estimate comprises:

But the reference of Kuwabara fails to specifically disclose weighting the pilot subcarriers based on fading gains for the pilot subcarriers; combining the weighted pilot sub-carriers in an observation vector former to generate an observation vector; and

recursively filtering the observation vector to generate the phase compensation estimate.

However, Proakis does. (See figure 11.1-6) Proakis discloses weighting the pilot subcarriers based on fading gains for the pilot subcarriers (wo, w1, w2, wN-2, wN-1); combining the weighted pilot sub-carriers in an observation vector former to generate an observation vector (these are combined in a summation unit on top); and recursively filtering the observation vector using a channel estimate to generate the phase compensation estimate. (the output of said summation unit is further multiplied by an error signal, which is an estimate of the channel.)

Therefore, taking the combined teachings of Kuwabara and Proakis as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Kuwabara, in the manner as claimed, and as taught by Proakis, for the benefit of optimizing the communication system.

Claim 15 has been analyzed and rejected w/r to claim 3 above.

12. Claims (3 & 15) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara et al. (hereinafter Kuwabara) (US Publication 2001/0015954 A1) in view of Nadgauda et al. (hereinafter Nadgauda) (US Publication 2002/0177427 A1)

Re claim 3, Kuwabara further discloses repeating generating and applying for subsequent data symbols of the OFDM packet, and wherein the data symbol is comprised of a plurality of symbol modulated sub-carriers, at least some of the symbol-

modulated sub-carriers of the plurality being the pilot sub-carriers, and wherein generating the phase compensation estimate comprises:

But the reference of Kuwabara fails to specifically disclose weighting the pilot subcarriers based on fading gains for the pilot subcarriers; combining the weighted pilot sub-carriers in an observation vector former to generate an observation vector; and recursively filtering the observation vector to generate the phase compensation estimate.

However, Nadgauda does. (See figure 1 & paragraphs 22-27) Nadgauda discloses weighting the pilot subcarriers based on fading gains for the pilot subcarriers (see fig. 1: 146); combining the weighted pilot sub-carriers in an observation vector former to generate an observation vector (see fig. 1: 148); and recursively filtering the observation vector using a channel estimate to generate the phase compensation estimate. (see fig. 1: 152 & paragraph 27)

Therefore, taking the combined teachings of Kuwabara and Nadgauda <u>as a whole</u>. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Kuwabara, in the manner as claimed, and as taught by Nadgauda, for the benefit of optimizing the communication system.

Claim 15 has been analyzed and rejected w/r to claim 3 above.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
July 23, 2007

David Payne
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SUPERVISORY PATENT EXAMINER